DOD HPC MODERNIZATION PROGRAM

NEWS RELEASE

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Contact: Kerry Larsen
Email: Kerry.Larsen@usace.army.mil

High Performance Computing Modernization Program Wins Innovation Excellence Award

The International Data Corporation (IDC) has again recognized the Department of Defense (DoD) High Performance Computing Modernization Program (HPCMP) as a leader in the application of HPC with its Innovation Excellence Award. The award, announced at the 2012 International Supercomputing Conference in Hamburg, Germany, recognizes the application of supercomputing-enabled flight certification for unmanned aerial vehicles (UAV) in the DoD.

The Innovation Excellence Award recognizes noteworthy achievements in the application of HPC. The program's main goals are to showcase return on investment and scientific success stories involving HPC, to help other users better understand the benefits of adopting HPC and justify HPC investments, especially for small and medium-size businesses and to demonstrate the value of HPC as an important enabler of innovation.

The HPCMP was recognized for its enabling role in the process of air-worthiness certification for UAVs, applying HPC physics-based simulation to develop a standard process for generating an aerodynamic database and aerodynamic data to support these certifications where none previously existed.

The cost of a conventional approach to flight certification (i.e., test article fabrication, scheduling wind tunnel time, test execution and data analysis) is on the order of $1 million per clearance and can take several months. This is often a prohibitive expense for small UAV programs.

The Computational Research and Engineering Acquisition Tools and Environments (CREATE) Air Vehicle team within the HPCMP developed the tools used as part of the new process. Prior to this effort the only alternative has been to rely on clearances from other organizations when they existed, or to accept flight restrictions. Now, with HPC and physics-based simulation, organizations can generate the aerodynamic data needed to support full air-worthiness certifications in a matter of weeks, enabling them to take full advantage of these new aircraft and get into operational service faster than ever before.

“This is one example of the many applications of CREATE tools being used with HPC across the spectrum of defense acquisition,” said Dr. Douglass Post, HPCMP chief scientist and leader of the CREATE project.

The process using computational analysis has already resulted in full air worthiness certifications for two UAV programs, which together represent several hundred USMC aircraft deployed. Six other UAV programs are now scheduled to take advantage of the process for obtaining air-worthiness certifications. CREATE is also developing similar tools for ship and radio frequency antenna design.

The submission “demonstrated a strong return on investment from the use of high performance computing,” according to the HPC user forum steering committee, which served as a judging panel for the awards.

EDITOR’S NOTE: The DoD HPCMP provides the DoD supercomputing capabilities, high-speed network communications and computational science expertise that enable DoD scientists and engineers to conduct a wide-range of focused research, development and test activities. This partnership puts advanced technology in the hands of U.S. forces more quickly, less expensively, and with greater certainty of success. Today, the HPCMP provides a complete advanced computing environment for the DoD that includes unique expertise in software development and system design, powerful high performance computing systems, and a premier wide-area research network. The HPCMP is managed on behalf of the DoD by the U.S. Army Engineer Research and Development Center in Vicksburg, Miss. For more information, please visit the DoD HPCMP Web site at: www.hpc.mil.